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TWO NEW SPECIES OF *CALIOTHRIPS* (THYSANOPTERA: THRIPIDAE) AND A KEY TO THE NEARCTIC SPECIES

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Abstract.—Two new species of *Caliothrips, C. floridensis* and *C. multistriatus,* are described from the United States. *Caliothrips insularis* (Hood) is a new record for the United States. A key is provided for ten Nearctic species.

The genus *Caliothrips* was reviewed by Wilson (1975) in his monograph of the subfamily Panchaetothripinae (Thripidae). He treated 18 species of the world including eight species from the Nearctic Region. Of the eight species, *C. fasciatus* (Pergande) and *C. phaseoli* (Hood) are pests of agricultural crops (Ananthakrishnan, 1984; Bailey, 1937). In this paper two new species are described, *C. floridensis* from Florida, and *C. multistriatus,* previously misidentified as *C. phaseoli* from southeastern United States. *Caliothrips insularis* (Hood) is a new record for the United States and its known distribution and host plants are given. A key is provided for the 10 species in the Nearctic Region.

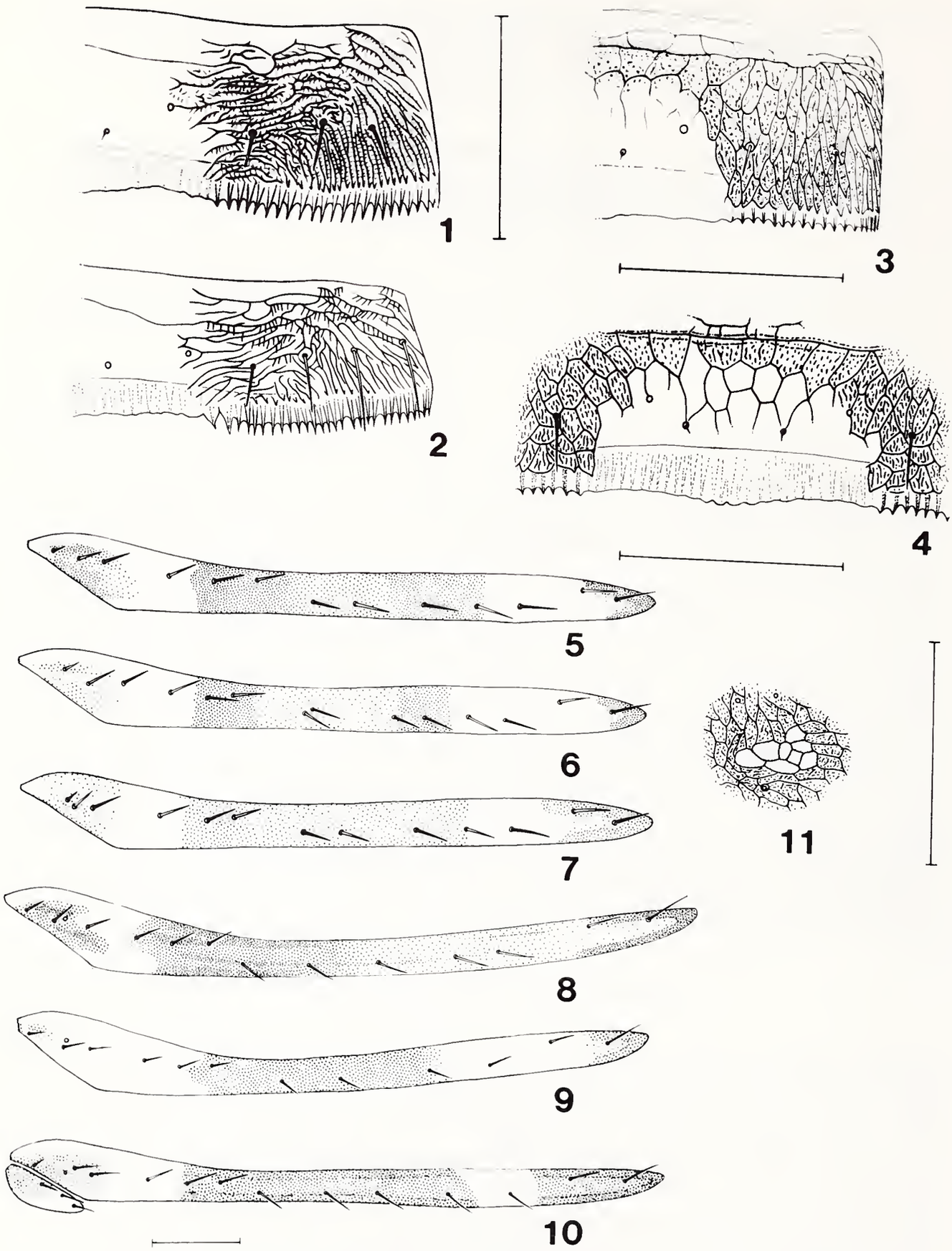
The acronyms for the depositories of examined material are: Natural History Museum, London (NHM); California Department of Food and Agriculture, Sacramento (CDFA); Florida State Collection of Arthropods, Gainesville (FSCA); Forschungsinstitut Senckenberg, Frankfurt am Main, Germany (FS); Georgia Station, University of Georgia, Griffin (GSG); United States National Museum of Natural History (USNM) (collection located at Beltsville, Maryland).

Caliothrips floridensis, new species

Figs. 3, 10, 11

Female: Body dark brown; head completely brown with ocellar crescent reddish orange; legs with tarsi yellow, most of femora and tibiae brown with bases and apices yellow. Forewings with basal brown area, broad median brown band about ½ as long as wing, and shorter apical brown band; subapical pale band about ½ as long as apical brown band (Fig. 10); all setae pale. Antennae brown except III and IV yellow with brown shade medially by subapical setae, most of V yellow, pedicel of VI pale.

Head slightly wider than long, completely reticulated; reticles on median part of head with wrinkles, posterior reticles mostly with short lines and raised dots; 3–4 rows of reticles along posterior margin of head differentiated from rest of reticles, posterior row with small raised dots, anterior with sparse small raised dots or weakly indicated wrinkles; ocellar setae III anterior of posterior ocelli, ocellar setae II anterolaterad of anterior ocellus; postocular setae 2 pairs, transversely aligned, lateral



Figs. 1–11. *Caliothrips* spp. 1–4. Abdominal tergite IV. 1. *C. multistriatus.* 2. *C. phaseoli.* 3. *C. floridensis.* 4. *C. insularis.* 5–10. Forewings. 5. *C. phaseoli* (darker median brown band). 6. *C. phaseoli* (paler median brown band). 7. *C. multistriatus.* 8. *C. insularis.* 9. *C. cinctipennis.* 10. *C. floridensis.* 11. Reticulations on median part of pronotum of *C. floridensis.* (Scale for all figures = 0.1 mm.)

pair near posterior margin of eye. Antennal segment II subglobular, wider than other segments, segments III–IV strongly constricted distally, III slightly longer than IV, VIII subequal to VI. Pronotum transverse, completely reticulated; reticles on pronotum mostly with raised dots and short lines (Fig. 11). Mesonotum without reticulations anteriorly; medially reticulated, reticles with raised dots and short lines; sculpture lines between median setae converging posteriorly, short lines between converging lines. Forewings with 20–21 costal setae, slightly shorter than anterior fringe cilia and longer than width of wings at midlength; forevein with basal setae in two groups of 3 and 3 setae, and 2 distal setae; hindvein with 5 setae. Abdominal tergites (Fig. 3) reticulated except reticulations in median part absent posterior of median setae on intermediate and posterior tergites, median reticles on anterior ½ of tergites with numerous small raised dots; reticles on lateral ⅓ mostly with small raised dots and few short lines; sternites polygonally reticulated; segment IX about twice as long as X, dorsal split about ⅔ as long as tergite X.

Male: Not available.

Measurements of holotype: Body length 1.41 mm. Forewing length 795–812 μm, width at midlength 40–44 μm. Median length of abdominal tergite IX 153 μm, median length of abdominal tergite X 72 μm.

Total length of antenna 252 μm (based on a paratype); segment I 17(24) μm, II 37(35) μm, III 47(22) μm, IV 40(22) μm, V 37(22) μm, VI 32(22) μm, VII 12(8) μm, VIII 30(6) μm. The length of the antennal segment is given first and the width is in parentheses.

Material: Holotype and 4 paratype females; Hilliard, Florida, sweeping, 5-X-38, F. Andre (USNM).

Etymology: Named after Florida, the only state where the species is known to occur.

Comments: This species closely resembles *cinctipennis* but is readily differentiated by the shorter subapical pale band on the forewings.

For the measurement of the antenna, a paratype was used because the basal antennal segments of the holotype are tilted and they could not be measured accurately.

Caliothrips insularis (Hood)

Figs. 4, 8

Hercothrips insularis Hood 1928:234.
Heliothrips bruneri Morgan 1929:8; Hood 1940:37.
Caliothrips insularis: Medina Gaud 1961:58; Wilson 1975:85.

Distribution: United States (Florida). Other countries: Bermuda, Brazil, Cuba, Dominican Republic, Grenada, Martinique, Mauritius, Panama, Puerto Rico, St. Croix, St. Lucia, Tobago, Trinidad, Venezuela.

Hosts: *Cymbopogon* sp. (lemon grass), *Cyperus esculentus,* grasses, *Lilium* sp., *Saccharum officinarum, Setaria barbata, Zea mays.*

Comments: This species has not been recorded previously from the United States. On hand are two specimens collected at Lakeland, Florida on 17 February 1913 on corn leaf and on 18 February 1913 on *Cyperus esculentus* by G. G. Ainslie.

Caliothrips multistriatus, new species
Figs. 1, 7

Caliothrips phaseoli (Hood): Wilson 1975:92.

Female body brown, except head brown in posterior ½, yellowish brown in anterior ½; ocellar crescent orange-red. Legs with tarsi yellow, femora and tibiae brown in medial ⅓–½, yellow apically and basally. Forewings with brown basal area, broad median brown band and brown apical band; subapical pale band about as wide as apical brown band or shorter; 1 dark seta usually in basal brown area, 1 dark brown seta normally at venal fork, 2–3 on hindvein in median brown band, 0–1 in subapical pale band and 1 in apical brown band (Fig. 7). Antennae brown except III–IV yellow, shaded brown in apical ½, V yellow in basal ⅔.

Head transverse, completely reticulated, reticles with wrinkles; 1–3 rows of reticles along posterior margin differentiated from other reticles, with sparse small raised dots or without marks; ocelli on raised area, ocellar setae III just anterior of posterior ocelli, ocellar setae II laterad of anterior ocellus; postocular setae two pairs. Antennal segment II wider than other segments, III–IV strongly constricted basally and distally, III about 2 times longer than wide, longer than VI; distal constriction of IV about as long as its constricted base. Pronotum twice as wide as long, about as long as head; completely reticulated, reticles on pronotum elongate with wrinkles. Mesonotum bare anteriorly, reticulated medially with wrinkles in reticles, sculpture lines converging posteriorly between median setae. Metanotum reticulated, reticles with wrinkles medially, bare laterally. Forewings with 20–21 costal setae, as long as anterior fringe cilia and longer than width of wing at midlength; forevein with 6 basal setae in two groups of 3 each, and 2 distal setae; hindvein with 3–5 setae. Abdominal tergites reticulated medially on tergite I and in anterior ½ and medially on tergite II, without median reticulations on other tergites; transversely and obliquely striated in lateral ⅓ of tergites with sparse microtrichia on several anterior sculpture lines and numerous wrinkles on interstices between transverse lines and between oblique lines on entire submargin (Fig. 1); segment IX about 1.65–1.75 times longer than X, anterior margin with median notch; irregular dorsal split, occasionally indicated as oval pale area on tergite X.

Males: Similar to females in color and most morphological characters; smaller. Abdominal sternites III–VII each with narrow, transversely elongate glandular areas, slightly narrowed in medial area, slightly curved anteriorly, 8–10 times as wide as long.

Measurements of holotype (female): Length from interantennal process 1.26 mm. Forewing length 779 μm, width at midlength 54 μm. Median length of abdominal tergite IX 86 μm, X 52 μm.

Total length of antenna 272 μm; segment I 27(20) μm, II 37(32) μm, III 52(23) μm, IV 47(22) μm, V 40(22) μm, VI 30(20) μm, VII 12(10) μm, VIII 27(5) μm. The length of the antennal segment is given first and the width is in parentheses.

Measurements of allotype (male): Length from interantennal process to posterior margin of abdominal segment X 1.04 mm. Forewing length 623–635 μm, width at midlength 42 μm. Length of median setae on IX: anterior pair 27 μm, posterior pair 32 μm. Glandular areas on sternites III–VII 54–72 μm wide, about 8 μm long.

Total length of antenna 254 μm; segment I 17(24) μm, II 35(30) μm, III 52(24) μm, IV 44(22) μm, V 40(17) μm, VI 27(20) μm, VII 12(8) μm, VIII 27(5) μm.

Material: Holotype female, allotype male: Henry Co., Georgia, *Lespedeza* sp., 30-X-87, R. Beshear (USNM). Paratypes: 13 females and 2 males with same data as holotype; 1 female, Hilliard, Florida, sweeping, 5-X-38, F. Andre; 4 females, Henry Co., Georgia, southern peas, 30-IX-87, R. Beshear; 14 females and 4 males, Henry Co., Georgia, *Cassia* sp., 30-IX-87, R. Beshear; Hamilton Co., Tennessee, 1 female, grass and weeds, 20-IX-39, F. Turner (39-16383). Depositories of paratypes: BMNH, CDFA, FSCA, FS, GSG, USNM.

Other material: Florida: Gainesville, 3 females, kudzu, 8-VI-21, J. R. Watson (USNM); 1 female, 23-IV-57, F. W. Mead (FSCA); 1 female, *Alysicarpus vaginalis,* 19-X-76, R. L. Crocker (FSCA); 1 female, *Cassia obtusifolia,* 4-IX-87, J. Gillmore (FSCA); 1 female, *Glycine max,* 4-IX-84, R. Hemenway (FSCA). Georgia: Tifton, 5 females, lupine, Fall 1955, C. Benton; 2 females, Fall 1956, C. Benton; 1 female, Winter 1956, C. Benton; 4 females, Fall 1957, C. Benton (58 11882); (USNM). Louisiana: Baton Rouge, 1 female, garden peas, 19-XI-15, C. E. Smith (USNM). North Carolina: Rocky Point, 2 females, *Pisum* sp., 24-XI-43, Wethacry (USNM). Tennessee: 1 male, soil under grass and weeds, 27 and 29-XI-39, F. Turner (39-19124) (USNM).

Distribution: United States (Florida, Georgia, Louisiana, North Carolina, Tennessee).

Hosts: *Alysicarpus vaginalis, Cassia* sp., *C. obtusifolia, Glycine max,* grass, *Lespedeza, Lupinus, Pisum, Pueraria thunbergiana,* southern peas.

Etymology: Specific ephithet derived from Latin "multus" and "stria" for the numerous wrinkles between the sculpture lines on the abdominal tergites.

Comments: Wilson (1975) treated specimens with an uniform brown median band on the forewings from Florida and Georgia as a color variation of *phaseoli.* I have examined these specimens as well as other specimens with uniform brown median band on the forewings from Florida, Georgia, Louisiana, North Carolina and Tennessee and conclude that they represent a new species, *multistriatus.* This species is similar to *phaseoli* except the forewings have an uniform brown median band, and numerous wrinkles are present between the sculpture lines on entire lateral ⅓ of abdominal tergites II–VII; conversely, *phaseoli* differs by the median brown band on the forewings either pale brown or almost completely white medially with two submedial brown bands, and by lacking wrinkles on the interstices on the lateral ⅓ of the tergites.

KEY TO NEARCTIC SPECIES OF *CALIOTHRIPS* (FEMALES)

1. Submargins of abdominal tergites transversely and obliquely striated, interstices with microtrichia, wrinkles or glabrous (Figs. 1, 2) 2
– Submargins of abdominal tergites polygonally reticulated, with wrinkles, short lines and/or small raised dots in reticles (Figs. 3, 4) 4

2(1). Forewings lacking basal brown area; 2–3 stout, dark brown setae at region of venal fork; subapical pale band with pale setae; base of antennal segment VI yellow .... *striatus* (Hood)
– Forewings with basal brown area (Figs. 5, 6), usually one dark brown seta at region

of venal fork; subapical pale band normally with 1 brown seta; antennal segment VI brown 3

3(2). Forewing (Figs. 5, 6) with median brown band lighter brown to almost completely pale medially with proximal and distal parts darker brown; subapical pale band usually wider than apical brown band; submarginal sculpture on lateral ⅓ of abdominal tergites with microtrichia only (Fig. 2), cephalad of dorsal setae ..... *phaseoli* (Hood)

– Forewing with uniform brown median band (Fig. 7) except proximal part of band usually slightly darker brown; subapical pale band about as wide as apical brown band; numerous wrinkles in interstices between transverse lines and oblique lines on entire lateral ⅓ of abdominal tergites V–VII (Fig. 1) ..... *multistriatus,* n. sp.

4(1). Forewings white except for brown apex and occasional pale brown blotch in basal ¼; antennal segments III–V predominantly yellow, shaded pale brown apically on III–V; legs yellow completely or shaded brown medially on femora and tibiae .... *punctipennis* (Hood)

– Forewings with brown crossbands or band along posterior margin; other characters various 5

5(4). Forewings with narrow brown band along posterior margin distally from sub-basal brown crossband, recurved at apex along anterior margin to about subapical venal seta; venal setae pale yellow; antennal segment III yellow in proximal ½, IV–V yellow in proximal ⅓ ..... *marginipennis* (Hood)

– Forewings crossbanded; venal setae in brown band normally brown; color of antennae various 6

6(5). Forewings each with three brown crossbands in addition to subbasal brown spot ..... *fasciapennis* (Hinds)

– Forewings with not more than two brown crossbands in addition to sub-basal brown spot 7

7(6). Pronotum with wrinkles in reticles; abdominal tergites III–V with medial reticulations absent or present in anterior ⅓; antenna brown, except III–IV yellow with medial ⅓ brown, V yellow at base ..... *fasciatus* (Pergande)

– Pronotum with raised dots and short lines in reticles (Fig. 11); abdominal tergites III–V completely reticulated medially or reticulations extending to median setae (Figs. 3, 4); antennal segments III–V yellow with distal ½ partially shaded pale brown 8

8(7). Forewing with median uniform brown band, abruptly separated from apical brown band by pale band; abdominal tergites mostly with small raised dots in reticles (Fig. 3) 9

– Forewing with median band dark brown at proximal part, gradually paler brown distally, pale brown or pale before darker brown apex (Fig. 8); abdominal tergites mostly with short lines and wrinkles in reticles (Fig. 4) ..... *insularis* (Hood)

9(8). Forewings with subapical pale band as wide or wider than apical dark band (Fig. 9); anterior part of head yellowish brown; antennal segment I yellow basally, brown distally, base of VI often yellow ..... *cinctipennis* (Hood)

– Forewings with subapical pale band shorter than apical dark band (Fig. 10); head completely brown; antennal segment I brown, VI brown ..... *floridensis,* n. sp.

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